Evidence-based education on cardiovascular disease risk reduction following a preeclampsia complicated pregnancy

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Abstract

Preeclampsia is a condition characterized by hypertension and microvascular disease that is diagnosed during pregnancy. While the acute symptoms of preeclampsia resolve during the postpartum period, extensive evidence has shown a history of preeclampsia establishes a higher risk for developing cardiovascular disease (CVD) —the leading killer of women—later in life. Yet, the majority of affected women are unaware of their elevated risk. The goal of this project was to develop an educational resource to increase awareness of risk, promote self-advocacy and provide risk reduction strategies for cardiovascular disease among women after a preeclampsia complicated pregnancy. Following a comprehensive review of literature, existing evidence was appraised and curated to address the knowledge deficit among women with a history of preeclampsia regarding future risk for heart disease and strategies to attenuate their risk. Health information from leading authorities including the Preeclampsia Foundation (PF) and the American Heart Association (AHA) was synthesized to produce efficient and effective evidence-based patient education to promote awareness and strategic approaches to primary and secondary prevention strategies, guided by the Orem Self Care Deficit Theory. Stakeholders at the academic medical center implementation site, including nurse educators and the patient education resource team, informed the project implementation in collaboration with content experts. Anticipatory guidance to promote the project outcomes were incorporated into patient education materials provided at discharge to all women with a diagnosis of preeclampsia. Patient education was implemented at the Ohio State University Wexner Medical Center (OSUWMC) in December 2018 and was linked to the patient's MyChart and accessible on OSUWMC's patient education platform. Equipped with the awareness to bridge the current gap in clinical practice,

women at risk for CVD after preeclampsia should be educated to self-advocate for their long-term cardiovascular and overall health.

Chapter I: Statement of the Problem

Introduction

A wide variety of complications may manifest during pregnancy. Some resolve during or at the conclusion of the gestational period, and others continue to impact women after pregnancy. In particular, preeclampsia is a condition that often unknowingly leaves women at a higher risk of developing cardiovascular disease (CVD) later in life versus women with normotensive pregnancies (Enkhmaa et al., 2016). Preeclampsia is understood to be a complex, rapidly-progressive disorder, characterized by new onset hypertension during gestation in combination with signs of maternal organ failure (The American College of Obstetricians and Gynecologists, 2013). Diagnostic criteria for preeclampsia can include proteinuria, thrombocytopenia, renal insufficiency, impaired liver function, pulmonary edema, headaches and vision changes (The American College of Obstetricians and Gynecologists, 2013). The correlation between preeclampsia and CVD is supported by evidence. However, susceptible women and healthcare providers are not adequately aware of the risk and associated strategies for risk reduction for the subsequent development of heart disease (Roth et al., 2019). It is critical that women with a history of preeclampsia are equipped with the proper education to advocate for their own health following a complicated pregnancy.

In order to maintain the best possible cardiovascular profile after preeclampsia, interventions need to be implemented across a woman's lifespan. These include lifestyle modifications and careful monitoring of CVD factors like blood pressure, blood sugar, and cholesterol. For the purpose of this project, the focus is on important factors contributing to cardiovascular health including blood pressure, cholesterol, blood sugar, physical activity, diet, weight, and smoking, recognized as "Life's Simple 7" by the American Heart Association

(AHA) (American Heart Association, n.d.). The goal of this project was to develop an educational resource to increase awareness of risk, promote self-advocacy and provide risk reduction strategies for cardiovascular disease among women after a preeclampsia complicated pregnancy.

Background of the Problem

Preeclampsia, among other hypertensive disorders of pregnancy, affects approximately three to eight percent of pregnancies across the world (Enkhmaa et al., 2016). These conditions are also associated with increased maternal and neonatal morbidity and mortality (Antza et al., 2018). Clinical understanding of preeclampsia has evolved over time, now recognized as a highly complex, multisystem disorder with many implications for women during and after pregnancy (Anderson & Schmella, 2017). Preeclampsia was recognized as a risk factor for CVD in 1999 in a consensus panel statement by the AHA (Mosca et al., 1999). Since then, numerous studies have provided evidence to substantiate the connection between preeclampsia and the subsequent development of CVD. Yet, affected women remain unaware of their risk.

This issue is compounded by the statistics associated with CVD and female mortality rates. Over the past thirty years, rates of preeclampsia have increased, affecting approximately 3.4% of the 120 million deliveries in the United States (Turbeville & Sasser, 2020). CVD is the leading cause of mortality in women and is responsible for approximately 1 in 3 female deaths (Garcia et al., 2016). Evidence shows lifestyle modifications can improve patient's cardiovascular profile and decrease premature death from CVD (Brown et al., 2018; Mosca et al., 2007). Currently, there is an absence in adequate translation of this evidence into practice. This means women with a history of preeclampsia are left with a duality of problems: they are unaware of their elevated risk of developing CVD and there is no defined structure in place to

guide the management of other modifiable CVD risk factors. An evidence-based practice (EBP) change is both appropriate and necessary to improve these patient's outcomes (Brown et al., 2018; Melnyk et al., 2017). Until evidence-based changes can be made to institutional policies and healthcare provider practices, patients need evidence-based customized education to provide them with the necessary awareness and appropriate actions to reduce their risk of developing CVD.

Purpose of the Project

The purpose of this project was to develop an educational resource to increase awareness of risk, promote self-advocacy and provide risk reduction strategies for cardiovascular disease among women after a preeclampsia complicated pregnancy. Awareness, advocacy, and risk reduction were identified as the defining pillars of this project. The combination of these three components are currently lacking in the translation from evidence to practice. Currently, evidence shows that women with a history of preeclampsia are not aware of their elevated risk of developing CVD and do not consider themselves at-risk cardiovascular patients (Seely et al., 2013). The relationship between preeclampsia and CVD has been substantiated by evidence for the past twenty years (Wu et al., 2017), yet standardized preventative or screening measures are not universally implemented in practice. While this gap between evidence and practice still exists, it is important to implement strategies to assure affected women have the tools and knowledge to bridge that gap for their own health. Thus, providing women with customized education for how to address relevant cardiovascular risk factors with their healthcare provider after a pregnancy complicated by preeclampsia enables them to be advocates for their future health. Finally, equipped with the knowledge and confidence to facilitate a conversation with their healthcare provider, women will have the opportunity to be counseled on what actions to

take now and in the future to achieve and maintain an optimal cardiovascular profile.

Significance of the Project

The significance of this project is that cardiovascular risk can be reduced by increasing awareness, promoting self-advocacy and providing risk reduction strategies for women with a history of preeclampsia. Focus group studies have shown that women with a diagnosis of preeclampsia are often unaware of their elevated risk for developing CVD (Seely et al., 2013; Seely, Tsigas, & Rich-Edwards, 2015). The findings of these studies demonstrate a need for affected patients to be appropriately educated on how to reduce their risk of developing a disease that will affect them for the rest of their lives. Multiple participants in these studies identified customized education as a suggested solution to the existing knowledge deficit (Seely et al., 2013; Seely, Tsigas, & Rich-Edwards, 2015).

Significance of this project was further validated by support from stakeholders relevant to the affected population. Prior to this project, the Ohio State University Wexner Medical Center (OSUWMC) did not have any patient education available to inform patients of their increased risk of developing heart disease following a pregnancy complicated by preeclampsia. Without appropriate education, women are not aware that preeclampsia is a non-modifiable risk factor for CVD. Empowered by evidence-based education, women can act towards reducing their CVD risk. Delivery of evidence-based patient education functions to increase awareness among affected women and promote self-advocacy and risk reduction behaviors.

Conceptual Frame of Reference

A model for change to evidence-based practice (Rosswurm & Larrabee, 1999) was utilized as the theoretical framework to navigate through this project. The six steps of the model guided the process of developing evidence-based educational content that had not previously

been translated into practice at OSUWMC for CVD risk after preeclampsia. Rosswurm and Larrabee's (1999) model, "supports evidence-based practice changes derived from a combination of quantitative and qualitative data, clinical expertise, and contextual evidence," (p. 317) all of which were utilized in the completion of this project. Additionally, the Orem Self Care theoretical model was used to organize and construct the content of the patient education material (Hartweg, 1991).

Definition of Terms

Awareness: Knowledge and understanding that something is happening or exists.

Advocacy: The act or process of supporting a cause or proposal.

Risk reduction: A decrease in the probability of an adverse outcome.

Chapter II: Review of Literature

Cardiovascular Disease and Women

CVD is the leading cause of mortality in the United States. The terms cardiovascular disease and heart disease are used interchangeably to describe medical conditions involving the heart and blood vessels. CVD encompasses multiple pathologies including coronary artery disease, peripheral vascular disease, heart failure, hypertension, and stroke. Based on data collected from 2013-2016 by the National Health and Nutrition Examination Survey (NHANES), 48% of adults 20 years and older have CVD, with prevalence increasing with age in both males and females (Virani et al., 2020). In the years 2013 to 2016, the prevalence of CVD among women ages twenty and older was approximately sixty million women, or 44.7% of the female population (Virani et al., 2020). A 2012 AHA survey reported 56% of women were aware of heart disease as the leading cause of death among females, an increase from 30% in 1997, with

awareness rates among black and Hispanic females lower that of white females (Virani et al., 2020).

There are many risk factors that contribute to the development of CVD, many of which are modifiable and lifestyle-dependent. The most critical modifiable risk factors include blood pressure, cholesterol, blood sugar, activity level, diet, weight, and smoking, according to the AHA (American Heart Association, n.d.). Awareness of the importance of these health behaviors and measurements is widespread among providers and patients. Screening guidelines for these risk factors are dependent on a patient's individual medical history and may take into consideration non-modifiable risk factors like family history. Screening tools designed to help providers predict an adult's risk of experiencing a cardiovascular event include the Framingham Risk Score (FRS), Pooled Cohort Atherosclerotic Cardiovascular Disease (ASCVD) Risk Equations, Assessing Cardiovascular Risk using Scottish Intercollegiate Guidelines Network (ASSIGN), QRISK®2 (version two of the QRISK® CVD risk algorithm), Prospective Cardiovascular Münster (PROCAM), Systematic Coronary Risk Evaluation (SCORE), and UKPDS (Wallace, Ricco & Barrett, 2014). Each screening tool is derived from a different adult population, and therefore most suitable in practice for various populations.

There are many underrecognized, non-modifiable, female-specific risk factors for CVD, a group of which are hypertensive complications of pregnancy. In particular, preeclampsia is a hypertensive complication of pregnancy that doubles women's risk for heart disease and quadruples the risk for high blood pressure (Preeclampsia Foundation, 2014). A Norwegian study showed 28.6% of women who were normotensive prior to pregnancy required pharmacologic intervention for high blood pressure within ten years of pregnancy complicated

by a hypertensive disorder (Virani et al., 2020). A history of preeclampsia offers an opportunity to identify women with an elevated risk for developing CVD (Kulinski, 2020).

Awareness & Advocacy

The AHA first included hypertensive disorders of pregnancy in guidelines for women's heart health over two decades ago (Mosca et al., 1999). However, affected women may be unaware of their elevated risk. Focus group studies have revealed affected women are unaware of their increased risk for heart disease, but are interested in learning what steps to take to reduce their risk (Seely et al., 2013). The women in the focus group identified the cost of healthy foods, familial commitments, and lack of time as barriers to adopting an ideal healthy lifestyle (Seely et al., 2013). They also identified a 'web-based' or 'online' format as the preferable delivery of risk-lowering resources and guidelines (Seely et al., 2013).

It is essential for the patient and the health care provider (HCP) to play an active role in chronic disease prevention. Often, as a woman's primary care provider, OB/GYN's have a unique opportunity to influence a woman's health even after reproductive years by identifying risk factors for chronic conditions early-on (Roth et al., 2019). Six different studies addressing HCPs' knowledge of the connection between preeclampsia and heart disease showed great variety in providers' level of awareness (Roth et al., 2019). Current evidence suggests that there is ineffective and inconsistent communication between in-patient maternity HCPs and outpatient HCPs regarding a women's history of a hypertensive disorder of pregnancy, the associated elevated risk for CVD, and need for follow-up (Roth et al., 2019). Experts recommend affected women seek referral from their obstetric provider to a primary care and/or cardiology HCP (Leslie & Briggs, 2019). The transition from acute inpatient care after a pregnancy complicated by preeclampsia to a long-term outpatient provider is essential for monitoring markers of

cardiovascular health and having access to appropriate referrals and counseling. Providers are not always adequately aware of their role and responsibility in this transition in care, however women's cardiovascular health outcomes can improve with enhanced communication strategies and collaboration between OB/GYN's and cardiologists (Brown et al., 2018). A scoping review found providers are unaware of the elevated risk for CVD following a preeclamptic pregnancy and preeclampsia is underrecognized in a patient's history as a clue for CVD development, globally (Roth, LeMarquand, Henry, & Homer, 2019).

Risk Reduction

As preeclampsia is not widely recognized in practice as a cardiovascular risk, screening guidelines for CVD are not routinely implemented. The PF's 2019 position paper on preeclampsia and heart disease in women endorses the inclusion of prenatal and delivery records in a woman's medical record, a thorough consideration of medical and family health history in the calculation of risk for developing CVD, and the assessment for metabolic syndrome because of the commonalities in presentation between metabolic syndrome and CVD (Leslie & Briggs, 2019.) Suggested lifestyle modifications include not smoking, having a healthy BMI (less than 25 kg/m_2), moderate activity at least 150 minutes per week, and a healthy diet like the AHA's Dietary Approaches to Stop Hypertension diet (Leslie & Briggs, 2019). There is limited and inconsistent evidence in the literature about the efficacy of lifestyle changes as a risk reduction strategy for specifically the affected population. One statistical analysis of the effects of lifestyle modifications as a CVD risk reduction strategy for preeclampsia survivors was shown to reduce risk by 4 to 13% (Stampfer, Hu, Manson, Rimm, & Willett, 2000). Another study found that incidence of a coronary event is more than 80% lowered by healthful lifestyle choices like not

smoking, eating healthy, half an hour of vigorous exercise a day, not being overweight, and moderate alcohol consumption (Stampfer, Hu, Manson, Rimm, & Willett, 2000).

Healthful lifestyle choices are important for all individuals to reduce risk of developing CVD, especially for those with a history of a pregnancy complicated by a hypertensive disorder. Appropriate screenings and referrals for modifiable risk factors should be conducted at outpatient visits. The indication for interventions including pharmacologic strategies should also be reviewed at outpatient visits. Specific screening technology and guidelines for the affected population should be enhanced to identify varying levels of risk and appropriate interventions throughout a woman's lifetime after a preeclamptic pregnancy. Women should be made aware of their elevated risk and feel empowered to begin a dialogue with a long-term care provider about risk-reduction strategies. Involved providers should leverage modern medical technology to improve the continuity of care provided for the affected population.

Chapter III: Methodology

This effort to deliver adequate and appropriate education to women for how to reduce their risk of developing CVD following a preeclamptic pregnancy is motivated by necessity. The absence of sufficient patient education leaves these women in a self-care deficit. This deficiency is the result of an imbalance between self-care demand and self-care ability. As of now, the demand for self-care is greater than women's ability to self-care. Unsuitable to meet the requisites for promoting their most favorable cardiovascular profile following preeclampsia, these women are susceptible to a variety of potential health complications.

Rosswurm and Larrabee's (1999) "Model for Change to Evidence-Based Practice" guided the design of this project. The following describes each step of the model as it pertains to this project.

Model for Change to Evidence-Based Practice

Step 1: Assess need for change in practice

Stakeholders were included in problem identification. Stakeholders from College of Nursing (CON) and OSUWMC identified the absence of awareness, advocacy and risk reduction for CVD following a preeclamptic pregnancy as the problem. Internal data from OSUWMC revealed there was no evidence-based patient education specific to the problem. External data from studies and publications around the world indicated the problem was not unique to OSUWMC. Stakeholders verified the need for an intervention to reduce women's risk of developing CVD after a preeclampsia complicated pregnancy by increasing awareness of risk, promoting self-advocacy and providing risk reduction strategies.

Step 2: Link problem with interventions and outcomes

Stakeholders arrived at evidence-based patient education as the appropriate intervention to the problem identified in step one. Educational content would be derived from evidence provided by external experts in the fields of women's health, obstetrics, gynecology and cardiology. Internal experts in patient education would ensure appropriateness of educational content (clarity, reading level, etc.) prior to implementation. Implementation into OSUWMC would act as measurable indication of satisfactory outcome.

Step 3: Synthesize best evidence

The review of literature yielded ample evidence to support the necessity for patient education for the affected population to reduce risk of developing CVD. Evidence was weighed

based on journal's impact factor and the source's relevance to purpose of the project. PubMed and CINAHL were used to conduct literature review. Search terms included "cardiovascular disease" or "heart disease", "preeclampsia", "risk reduction", "women" and "prevention". Evidence from databases supported the necessity of intervention for the problem identified in step one. Health information from PF and AHA substantiated the evidence to be included in patient education content. Testimonials from stakeholders increased strength of evidence to support a change in practice. The project was deemed feasible by stakeholders and no risks were identified. CVD risk reduction after a preeclampsia complicated pregnancy was recognized as a benefit of the project.

Step 4: Design a change in practice

Introducing an evidence-based patient education piece for CVD risk reduction after a preeclampsia complicated pregnancy was the proposed change to practice. The production of the patient education piece required the collaboration of many different professionals from a variety of disciplines and departments at the OSUWMC and CON. Individuals from the CON, postpartum nursing education, and the patient education resource team worked together to produce the most efficient and effective delivery of the educational content for the patients. All collaborators were made aware of the purpose of this project and contributions were within respective defined scope of practices.

The Orem Self Care Deficit Theory was utilized as a framework for curating the content included in the patient education designed to reduce women's risk of developing CVD after a preeclampsia complicated pregnancy by increasing awareness of risk, promoting self-advocacy and providing risk reduction strategies. The theory operates on a number of assumptions, multiple of which align with the purpose of the project. These pertinent assumptions include:

individuals should be self-sufficient and responsible for their care, and a knowledge of potential health complications is required to promote self-care behaviors (Hartweg, 1991).

The three components of the theory and their respective subcomponents informed the curation of health information and risk reduction strategies to be included in the educational content. They are the theory of self-care, theory of self-care deficit, and theory of nursing system (Hartweg, 1991). The theory of self-care recognizes the therapeutic self-care demand, requisites, and agency of women with a history of preeclampsia in the contemporary health care system. The theory of self-care deficit describes a person's inability to promote their own well-being. For the purposes of this project, the self-care deficit is women's lack of awareness of their increased risk for CVD and their subsequent inability to advocate for their own health. The final component, the theory of nursing systems, describes how the nurse can act to meet the self-care requisites of the patient. In this project, patient education is the intervention designed to meet the self-care requisites of affected women.

Health information from the PF website supplemented by recommendations and guidelines published by the AHA were the principle sources from which content for the patient education was collected (Brown et al., 2018; Preeclampsia Foundation, n.d.). The PF is the authority patient advocacy organization in the United States for women who are affected by any of the hypertensive disorders of pregnancy. An online PF publication titled "Take Heart and Take Care: Preeclampsia May Be Associated with Heart Disease and Stroke Later in Life" highlights statistics regarding increased risk for CVD, modifiable risk factors to discuss with health care providers, and what affected woman can do to lower their risk (Appendix 1). The AHA is an authoritative entity in the field of cardiovascular health. The PF recommendations are echoed and expanded upon by an AHA publication titled "Promoting Risk Identification and

Reduction of Cardiovascular Disease in Women Through Collaboration With Obstetricians and Gynecologists" (Brown et al., 2018). This publication offers more precise primary and secondary prevention strategies for women and CVD. Upon completion of educational content curation, implementation was dependent upon the patient education resource team at OSUWMC implementing the evidence-based education into practice.

Population and Setting

The population exposed to the patient education was all inpatient postpartum women with a diagnosis of preeclampsia at OSUWMC Department of Maternal and Infant Health. There were no exclusion criteria. The evidence-based education is suitable for all women to receive for the purpose of awareness of future cardiovascular risk.

Chapter IV: Results

Step 5: Implement and evaluate the practice change

Patient education was implemented at OSUWMC in December 2018. It was linked to patient's MyChart and is accessible on OSUWMC's patient education platform (patienteducation.osumc.edu). It can be found in the form of a PDF document under the topic of 'Heart Diseases' with the title 'Risk Factors for Heart Disease: After a Preeclamptic Pregnancy'. The product of the project was evidence-based educational content designed to bring awareness, promote advocacy and encourage risk reduction strategies. The content of the patient education includes information about risk for CVD after a preeclampsia-complicated pregnancy and primary and secondary preventative strategies. (See Appendix 2.)

The educational content was included in the discharge paperwork patients received when discharged home from the postpartum nursing unit. Focus groups of women in the postpartum

period of a preeclamptic pregnancy have recognized an online-accessible format as the preferred method of receiving information on this topic (Seely et al., 2013; Skurnik et al., 2016). OSUWMC patients have access to the online platform, "MyChart" (mychart.osu.edu), where they can find and access at any time their tailored discharge instructions, including the CVD risk reduction education.

Step 6: Integrate and maintain the practice change

Since implementation, OSUWMC has adopted a different discharge bundle for affected patients, limiting ability to evaluate sustained practice change.

Chapter V: Conclusions & Discussion

Conclusions

Identifying and critically assessing the need for this project lead to the design of this patient-centric educational content and established a foundation for evidence-based practice change on the institutional and practitioner level. The purpose of this project was to develop an educational resource to increase awareness of risk, promote self-advocacy and provide risk reduction strategies for cardiovascular disease among women after a preeclampsia complicated pregnancy.

Awareness of one's cardiovascular health and how to improve it is important for all women, especially those with unmodifiable risk factors like preeclampsia. Given the reality of morbidity and mortality associated with CVD, HCPs have an obligation to inform women of risk factors and how to reduce their risk. Both acute and outpatient providers caring for women have opportunities to reduce risk through education, screening and counseling.

Limitations

Limitations of the content's design included the necessary brevity and generalization of guidelines and recommendations to make the education applicable to a variety of patients. The institutional change of education delivery limited the evaluation of the sustained practice change.

Implications of this Project

Given the morbidity and mortality associated with CVD, practitioners have an obligation to inform women of risk factors and risk reduction strategies. Further evidence-based changes to practice are indicated to reduce risk of developing CVD after a preeclamptic pregnancy. Evaluation of the influence of education on the advocacy, awareness and risk reduction regarding CVD in women after preeclampsia would inform the impact of this project.

Recommendations

Chronic disease prevention is a responsibility of all clinicians caring for women across the lifetime. An active approach to prevention and risk reduction strategies informed by providers are necessary for women to achieve their most favorable cardiovascular profile. Healthful lifestyle choices are an appropriate teaching point during every patient-provider interaction.

Improved coordination and communication between OBGYNs and outpatient providers, cardiologists, primary care, etc., would benefit patients across the care continuum. HCPs could better assess the individual's needs and determine appropriate plans for chronic disease risk reduction and/or management strategies. In order to achieve this, providers must be equipped with evidence-based knowledge of non-modifiable and modifiable risk factors for chronic pathologies.

Standardized screening guidelines for CVD can be improved by considering pregnancy-related non-modifiable risk factors as well as modifiable risk factors. Obtaining a complete

health history, including obstetric history, is the first step in creating a comprehensive risk reduction plan for patients' lifelong health. Measurable indicators of cardiovascular health including, blood pressure, blood glucose, weight, cholesterol, etc., should be recorded based on evidence-based guidelines. Regular screening can enhance patients' understanding of the influence of lifestyle choices on their health. Reassessment of risk factors should be a routine part of outpatient care.

Due to the significance of modifiable risk factors in determining one's cardiovascular health, education on healthy lifestyles and behaviors should be a cornerstone of care for all women. Poor dietary choices and inadequate activity levels are major contributors to chronic diseases, meaning decreased quality of life and increased healthcare costs. Providers leveraging modern technology can improve the care continuum and decrease the burden of chronic diseases for patients. Electronic medical records and digital patient profiles are a powerful platform for communication between providers and patients. Optimization of technology promotes patient-centric care and can be used by providers to institute preventative measures and also to educate and empower women.

All women deserve to be aware of risk factors for chronic conditions, specifically CVD, because of the associated morbidity and mortality. Affected women need to feel empowered to advocate for their own health and engage in a dialogue with their providers in order to take active steps towards a healthier future.

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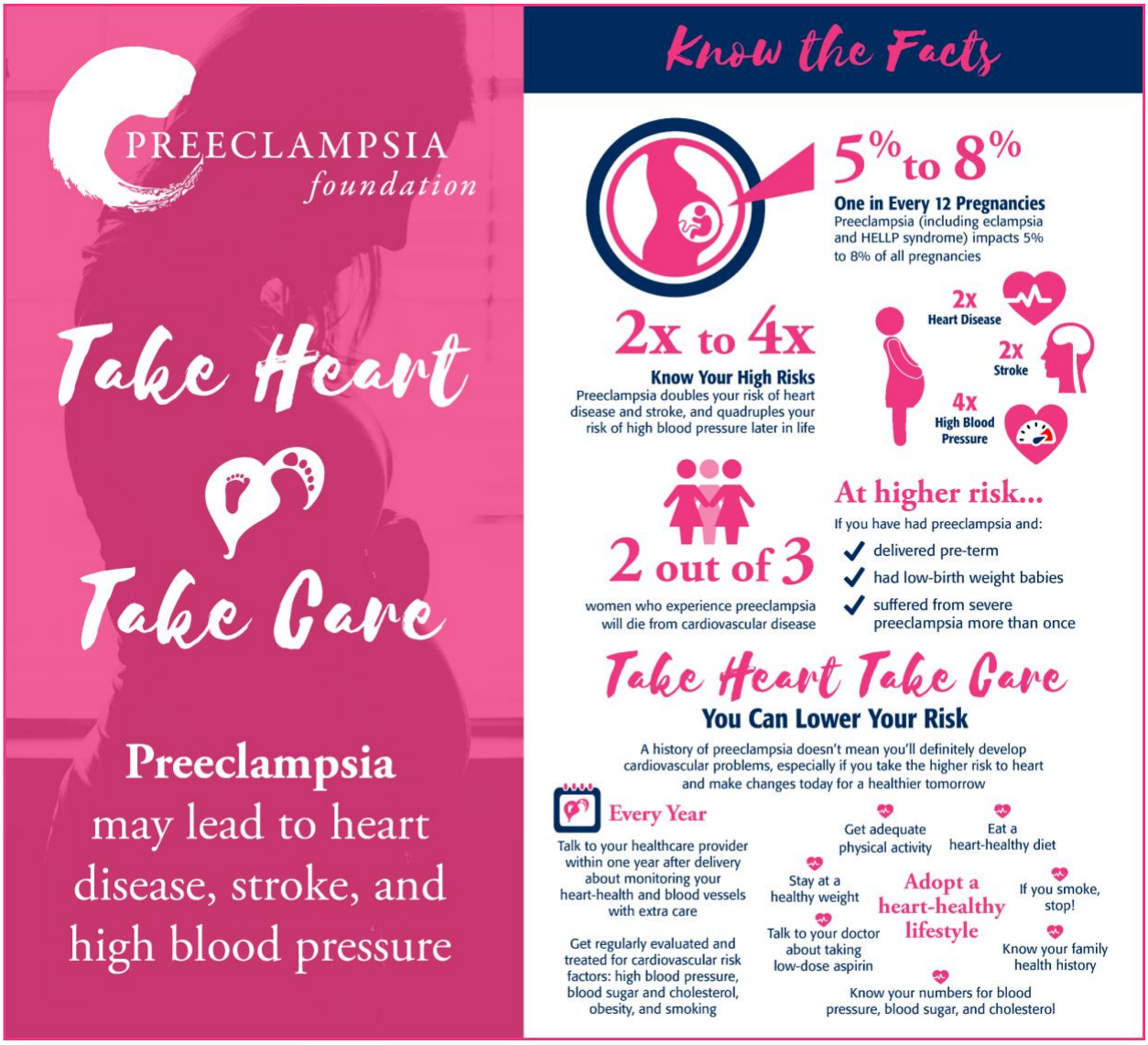
Appendix



Appendix 1. Preeclampsia Foundation. (n.d.). *Take heart and take care: Preeclampsia may be associated with heart disease and stroke later in life* [Illustration]. Retrieved from https://www.preeclampsia.org/health-information/heart-disease-stroke

Risk for heart disease

Having preeclampsia puts you at higher risk of having heart disease later on. Heart disease is the leading cause of death for women in the United States.

While there are some risk factors disease you cannot control, such as having preeclampsia or a family history of heart disease, there are many things you can do to lower this risk.

Heart-healthy Steps to Lower Your Risk

- Eat a healthy diet with fruits, vegetables, whole grains, and fat-free or low-fat milk products.
- Choose foods low in saturated fats, cholesterol, salt, and added sugars.
- Exercise regularly. Adults need 2 hours and 30 minutes (or 150 minutes total) of exercise each week.
- Be tobacco free and avoid being around other people that are smoking.
- Limit alcohol use. If you do choose to drink, limit to 1 drink a day and none if you are pregnant.
- Manage medical conditions that also put you at risk, such as diabetes.
- Stay at a healthy weight. If you are overweight, talk to your healthcare provider about healthy ways to lose weight.
- Know your blood pressure. Normal blood pressure is around 120/80 mm Hg. Most people have no symptoms of high blood pressure. The only way to know is to have it checked.

Talk to Your Healthcare Provider About Your Pregnancy History

After your pregnancy, be sure to tell your healthcare provider about your history of preeclampsia when you go for annual check ups. Because heart disease takes years to develop, you can work with your healthcare provider to monitor the health of your heart and blood vessels.

Appendix 2. Screenshot of evidence-based patient education content that is now available to patients at https://patienteducation.osumc.edu/Documents/pre-clam.pdf. “Risk for heart disease” section of education was added as a result of this project and published on December 17, 2018. Other health information in the education was updated to reflect most recent evidence.

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